A Search for Spectral Rotational Variations on S-Type Asteroids

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We have initiated a statistical search for spectral rotational variations on S-type asteroids using the Ohio State Infrared Imaging Spectrometer (OSIRIS) at the 72 inch Perkins Telescope at Lowell Observatory. Spectral rotational variations may be the result of inherent mineralogic variations, or they may be the result of differential response to weathering across the surface of an asteroid. Previous studies of rotational variation have been plagued by instrumental inability to sample the spectrum quickly enough to prevent flux variations due to light curve variations or sky instability from showing up in the data. In addition, such studies have been limited to very few objects, and are usually constrained by brightness considerations (e.g. Gaffey 1984, *Icarus* **60**). However, because spectra with OSIRIS are obtained simultaneously from 0.9 to 2.2 microns, we expect to have no such troublesome effects in the data, and OSIRIS will permit observations of asteroids at least as faint as 14th Vmag. Spectra have been obtained thus far for four S-type asteroids (20, 29, 126, 287) which have slow rotation rates and relatively low light-curve amplitudes. Each asteroid was observed on average three times spaced evenly over each of two nights. These data are part of an on-going effort to characterize the statistics of spectral rotational variability on S-type asteroids. A characterization of their occurrence will lead to better understanding of asteroid surface variations and their compositional interpretations.

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